

CERES/GERB Shortwave and Longwave/Day Comparisons

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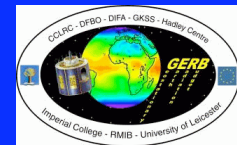
Z. Peter Szewczyk¹

¹SAIC Hampton, VA

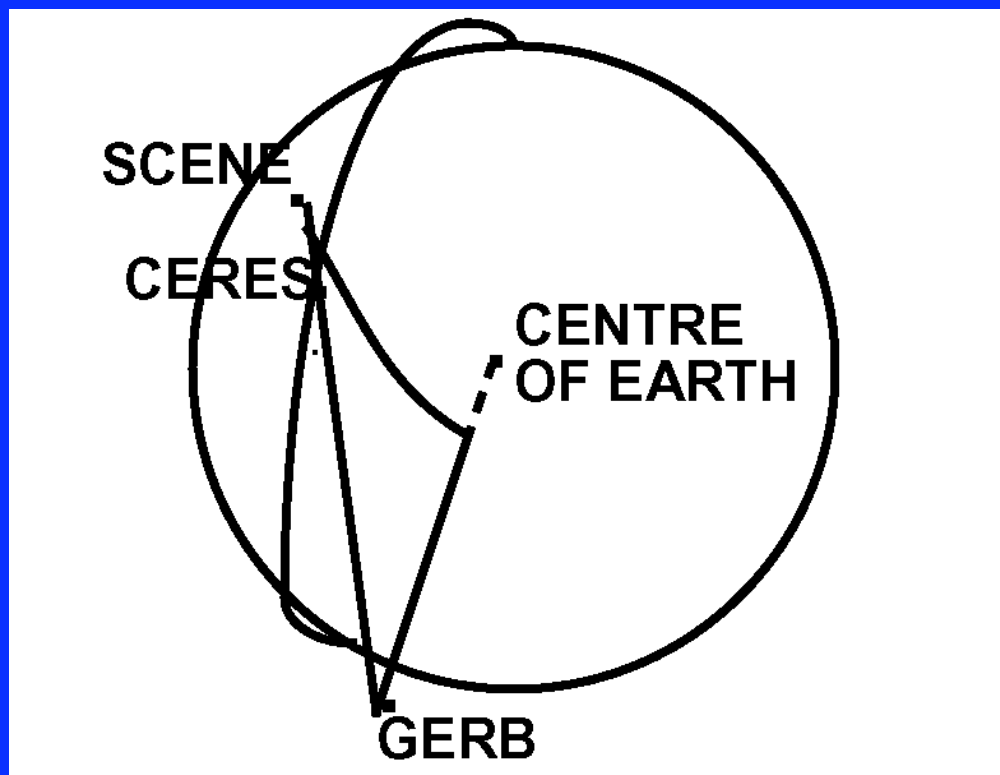
²National Institute of Aerospace Hampton, VA



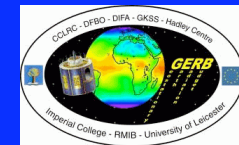
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CERES Scan Plane Rotates to Contain GERB, Thus Observe Same Radiance



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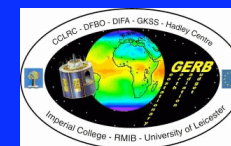


Criteria for SW Matches

- Use GERB L1.5 NANRGs for time
- Use RMIB's unfiltered SW radiances, angles, and geolocations for GERB
- Use CERES Edition 2 Revision 1 ES8s
- View zenith and relative azimuth angles within 5°
- Near GERB subsatellite point, accept matches within 10° angle between GERB & CERES rays
- Comparison is based on each GERB detector



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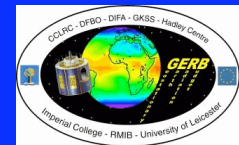
GERB/CERES

Special Operations

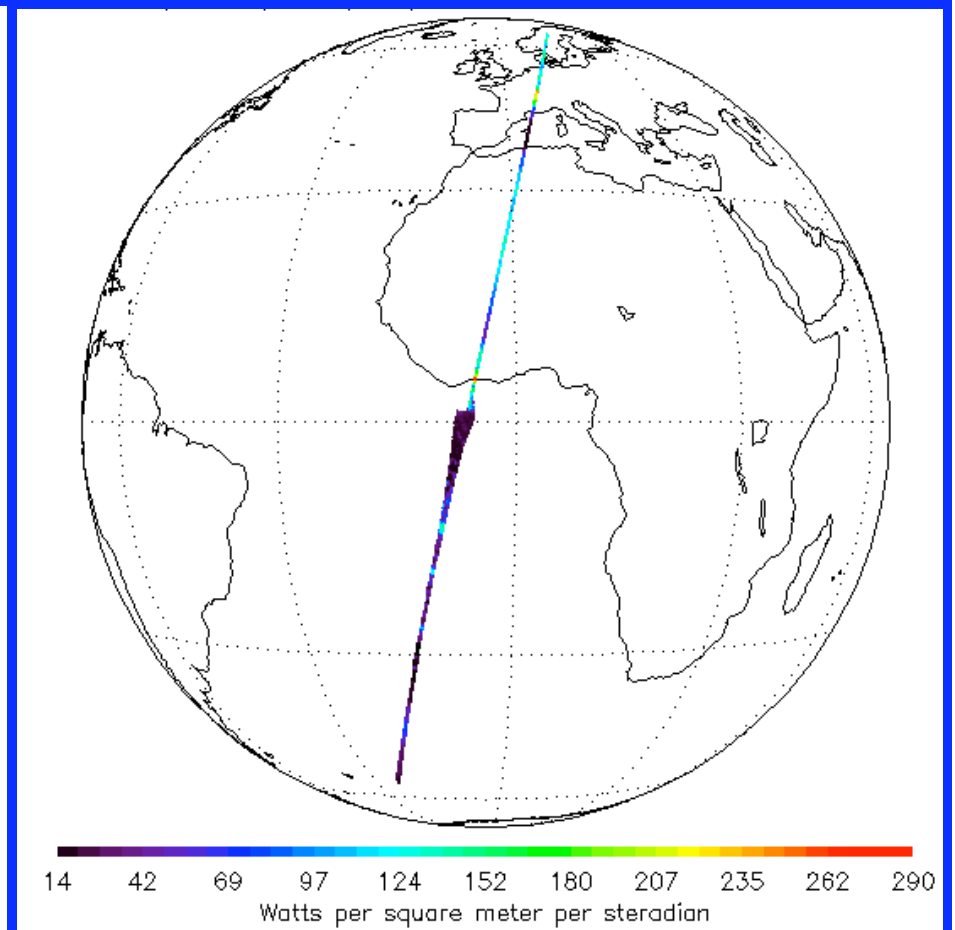
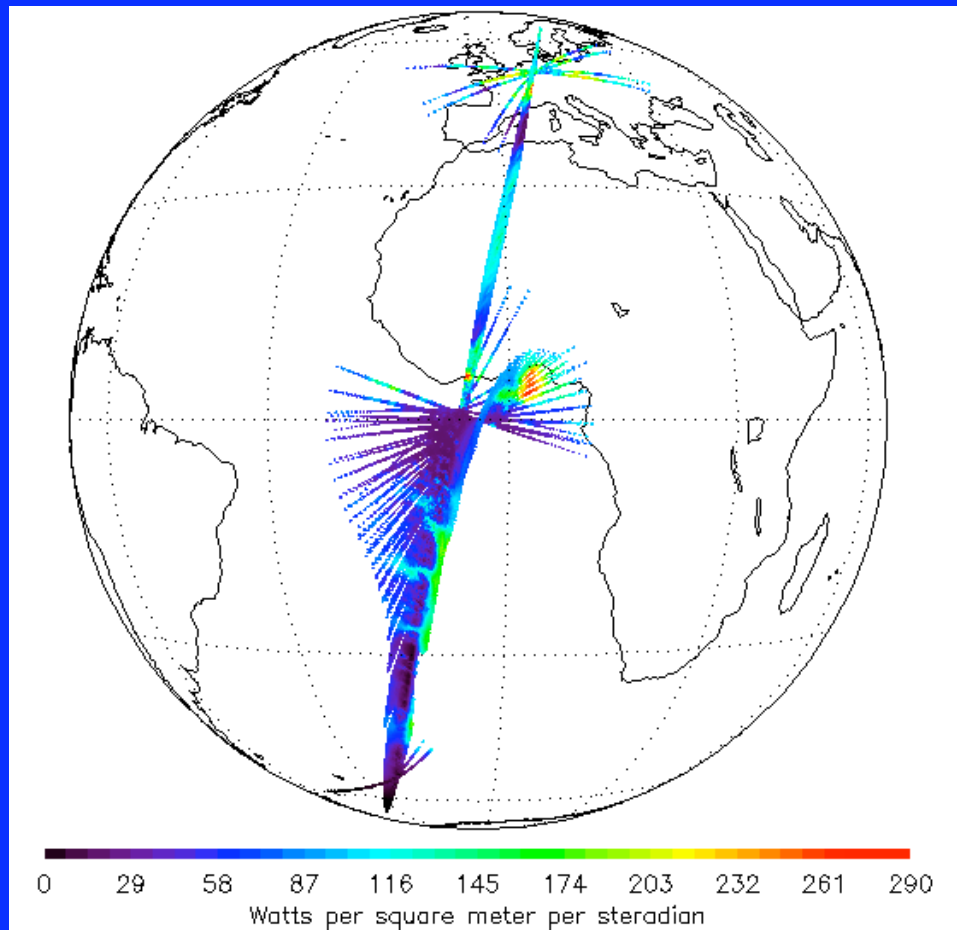
- December 2003/January 2004 15 days
- June/July 2004 27 days
- December 2004/January 2005 26 days
- June 2005 21 days



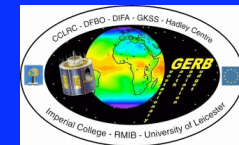
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CERES Matches for June 11, 2004

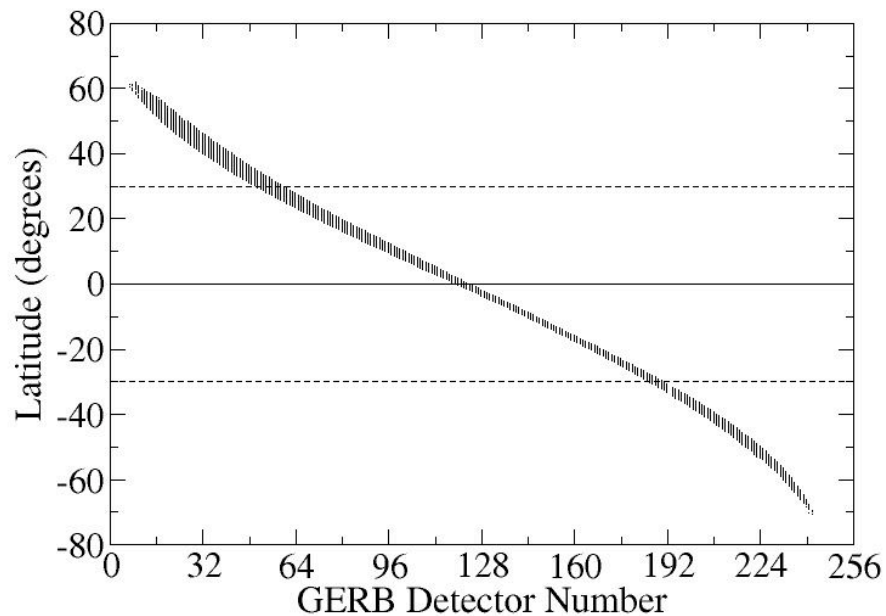


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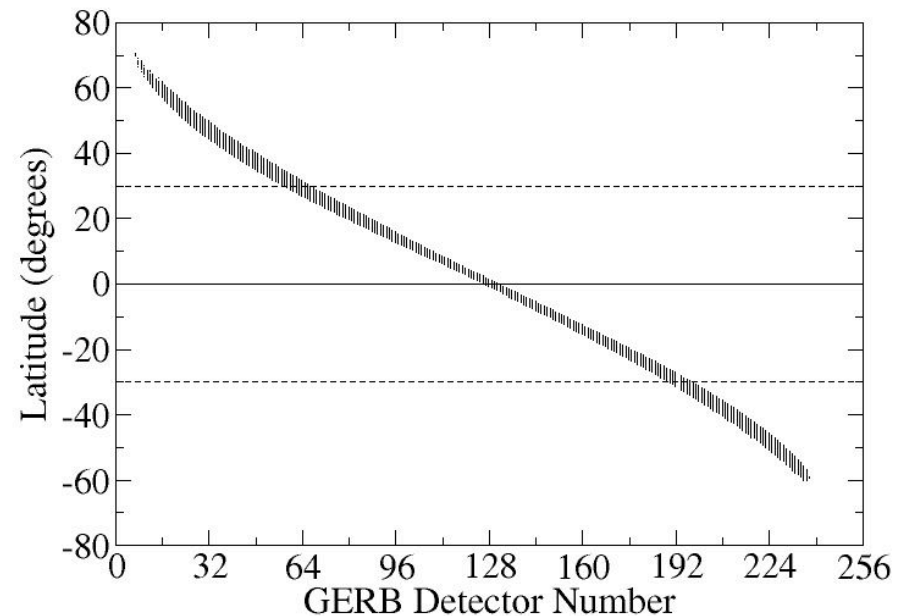


Latitude Coverage

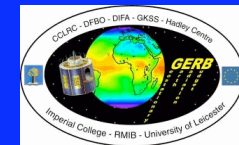
December 2003 / January 2004



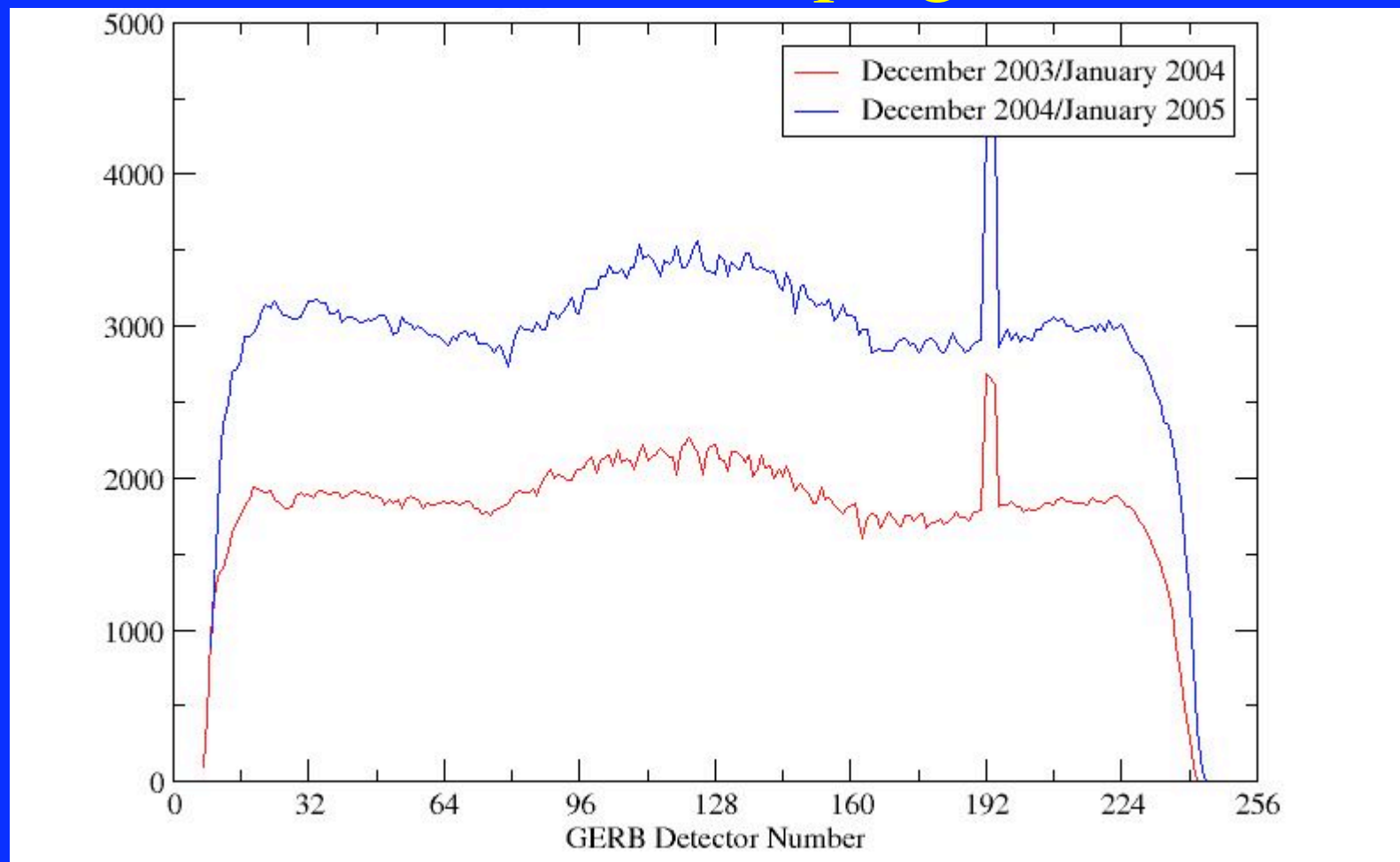
June / July 2004



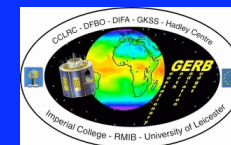
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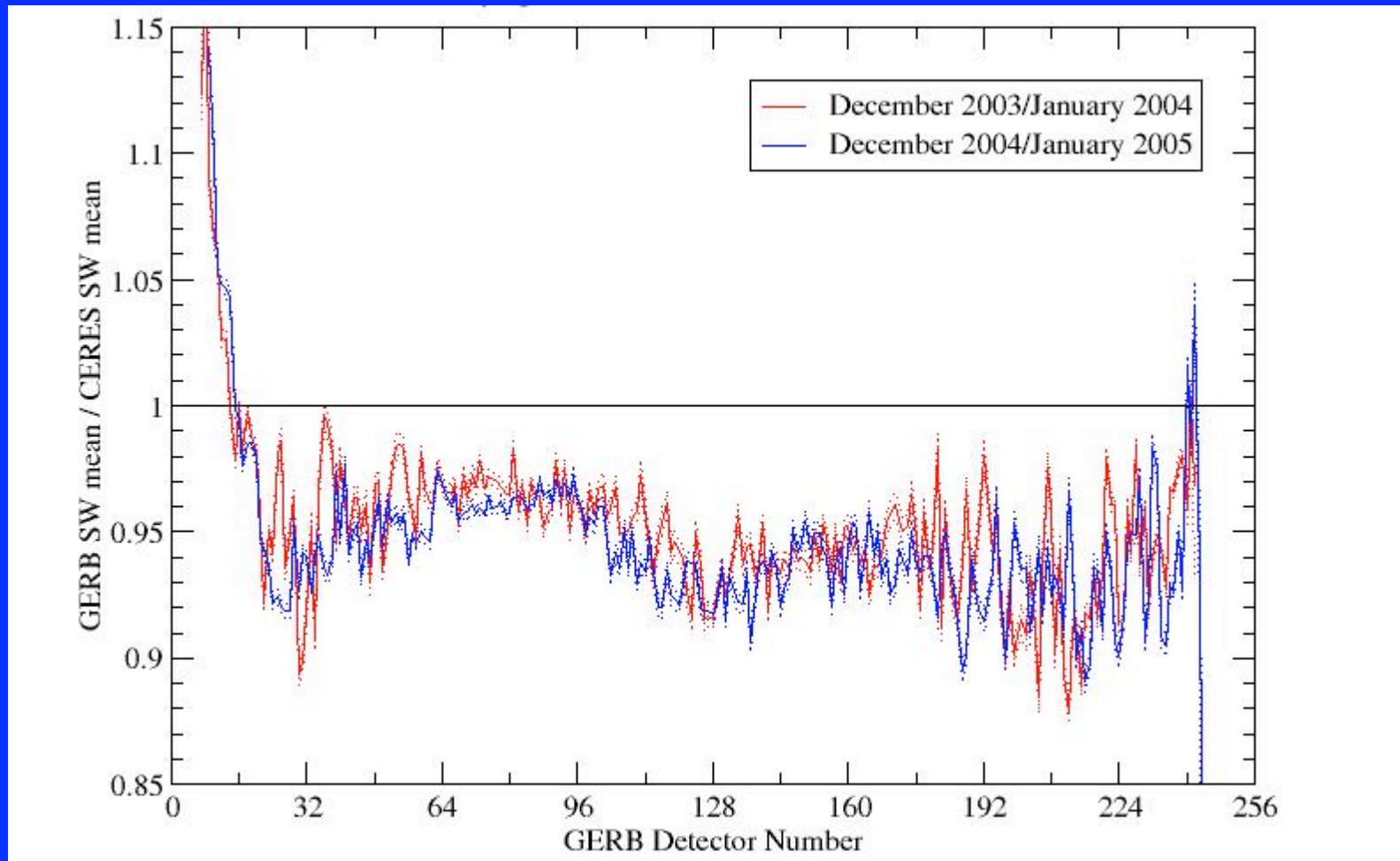
Number of Matches for Each Detector Winter Campaigns



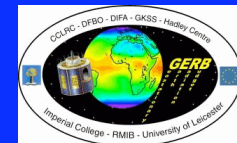
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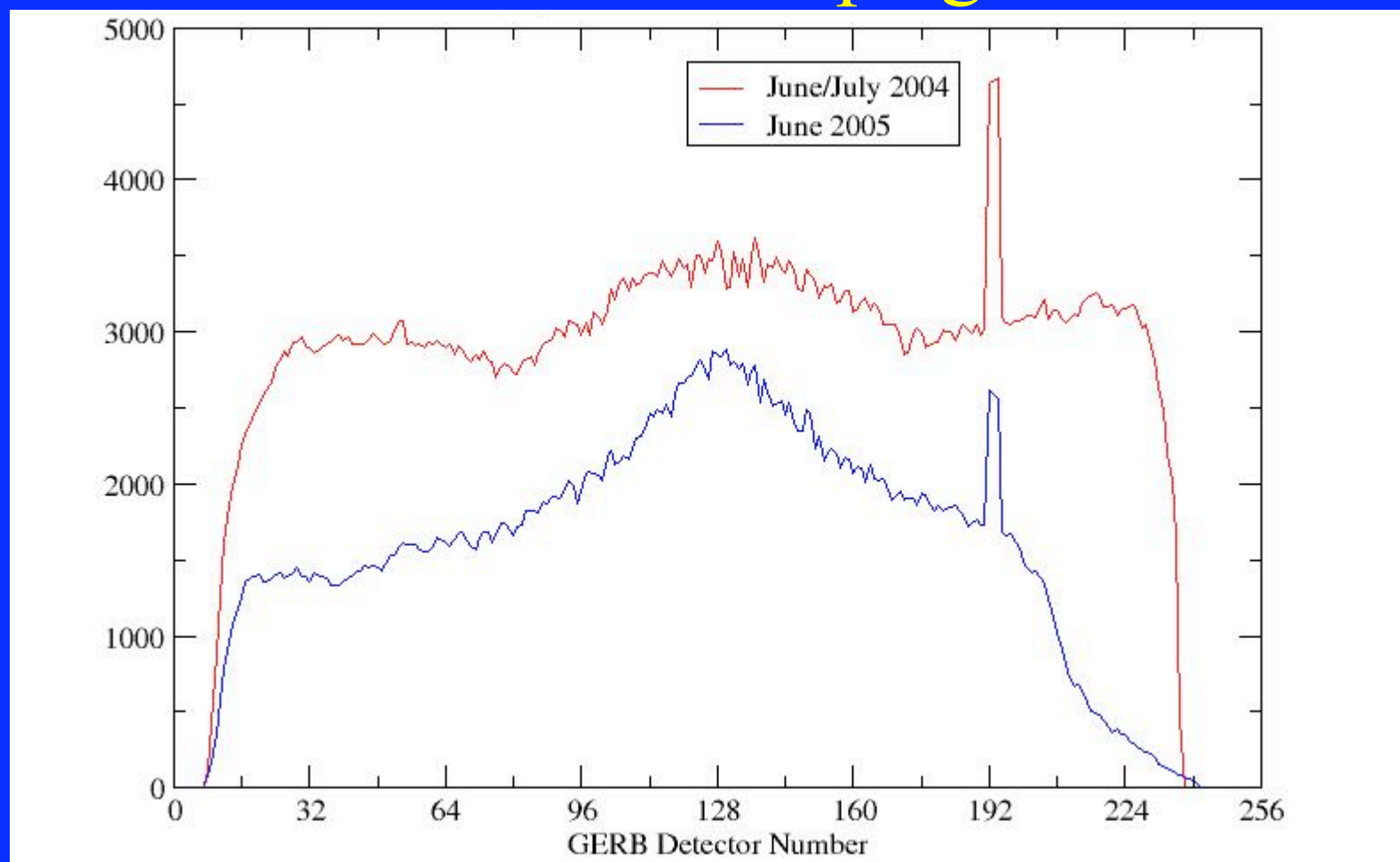
GERB SW Mean/CERES SW Mean Winter Campaigns



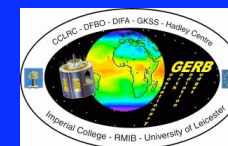
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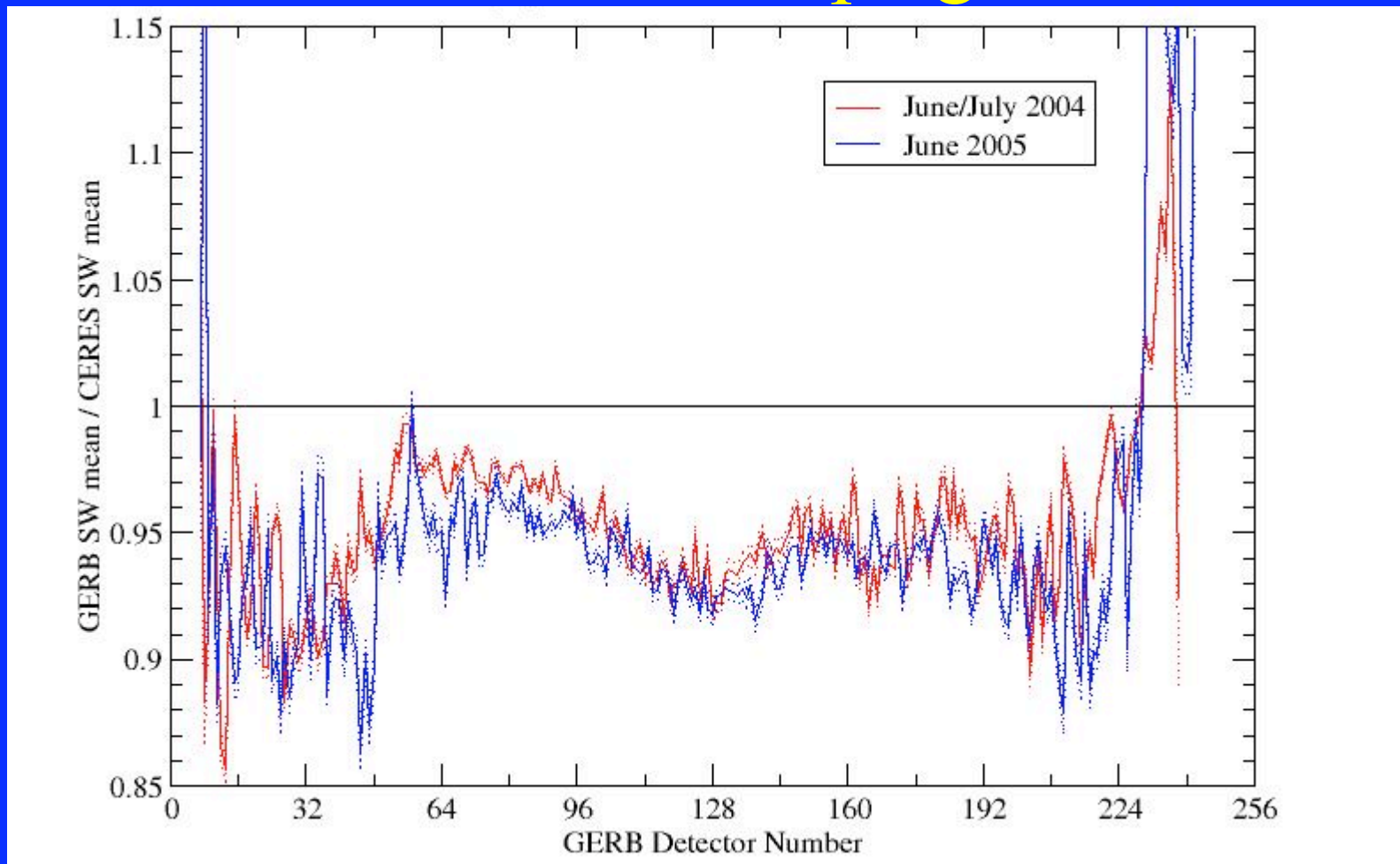
Number of Matches for Each Detector Summer Campaigns



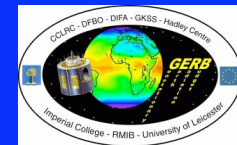
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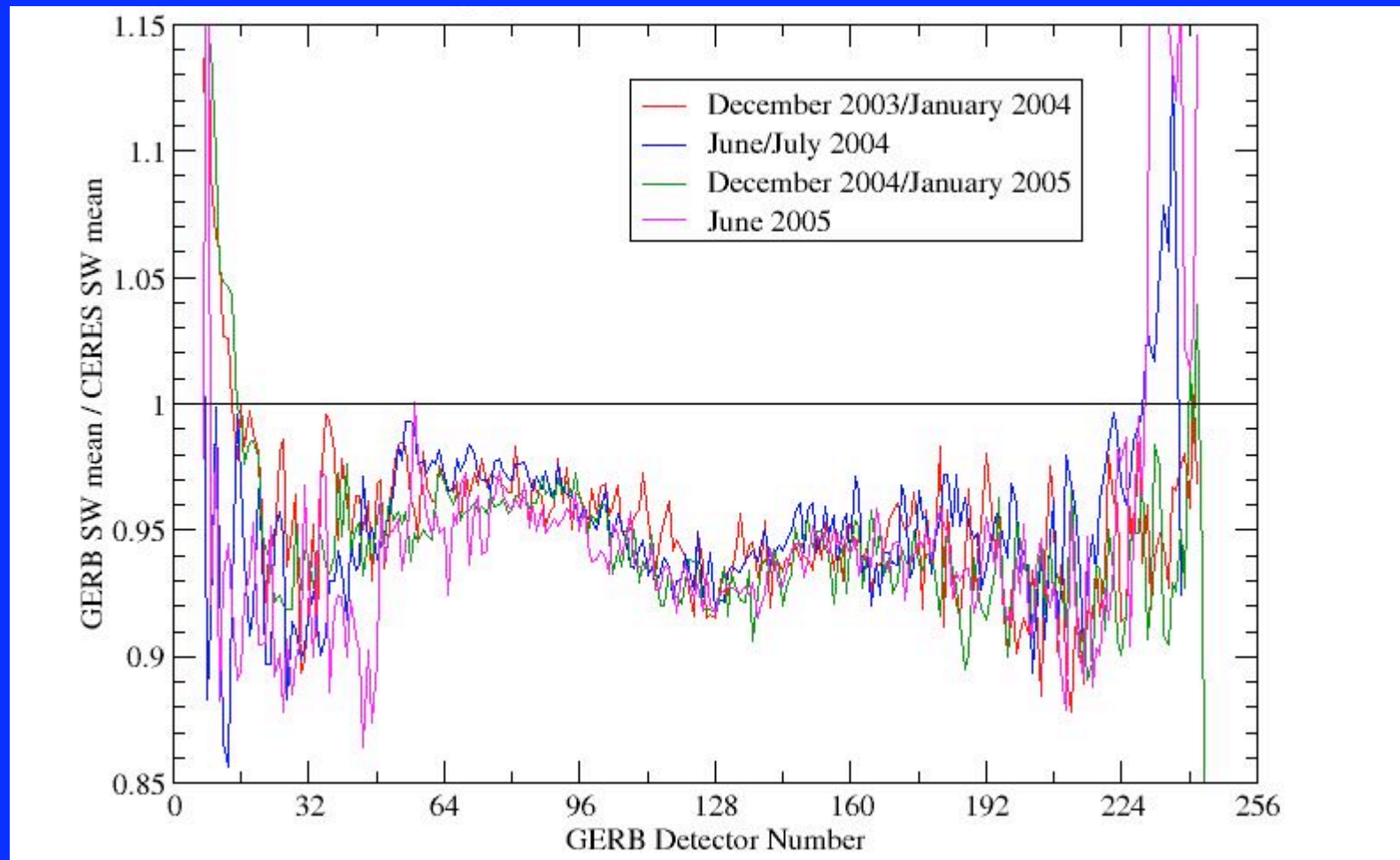
GERB SW Mean/CERES SW Mean Summer Campaigns



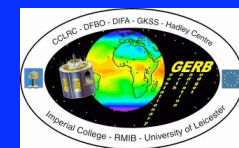
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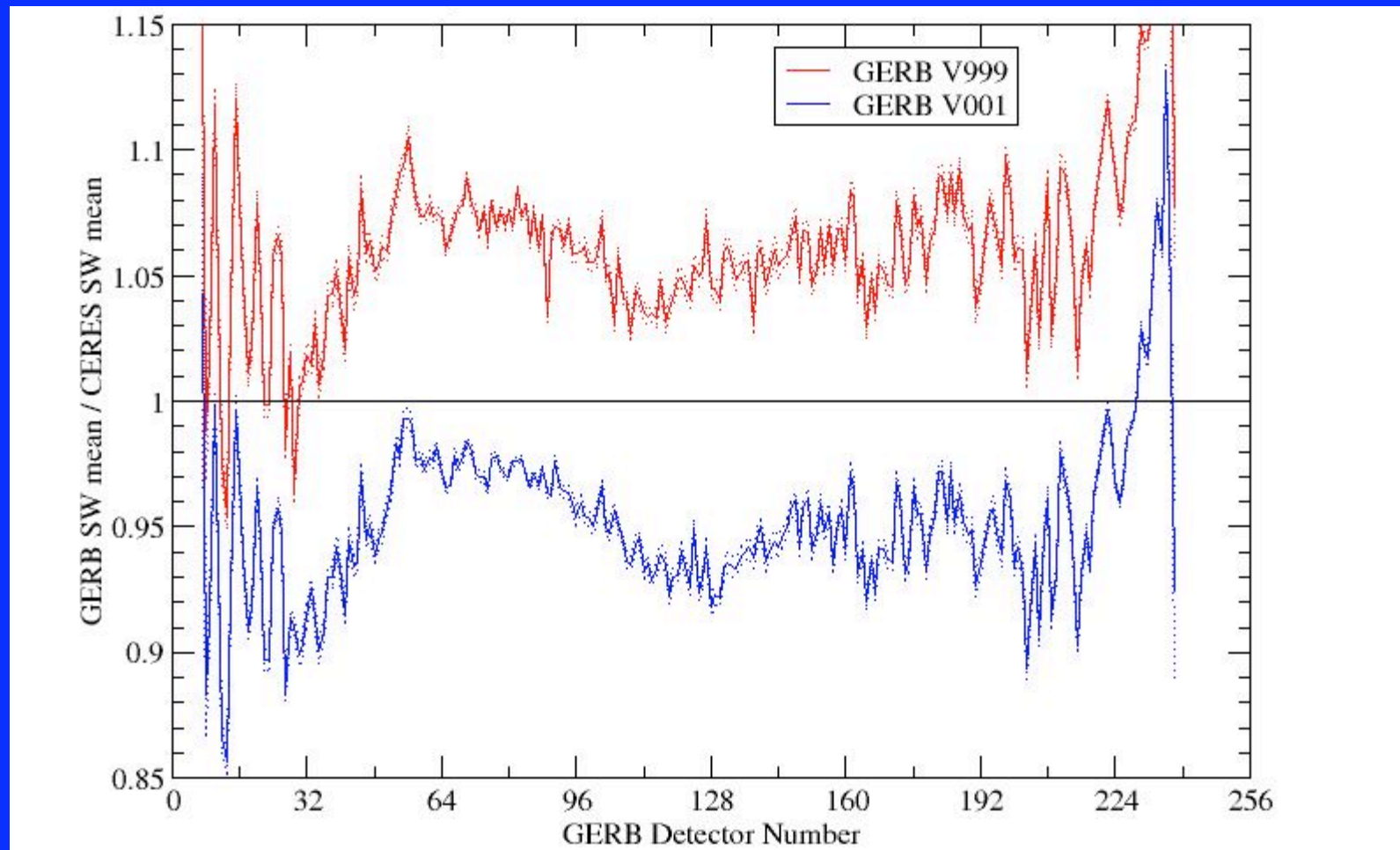
GERB SW Mean/CERES SW Mean All Campaigns



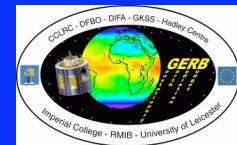
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GERB SW Mean/CERES SW Mean June/July 2004 – Both GERB Versions



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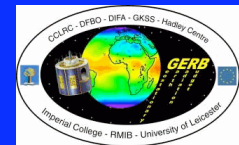


Criteria for LW Matches

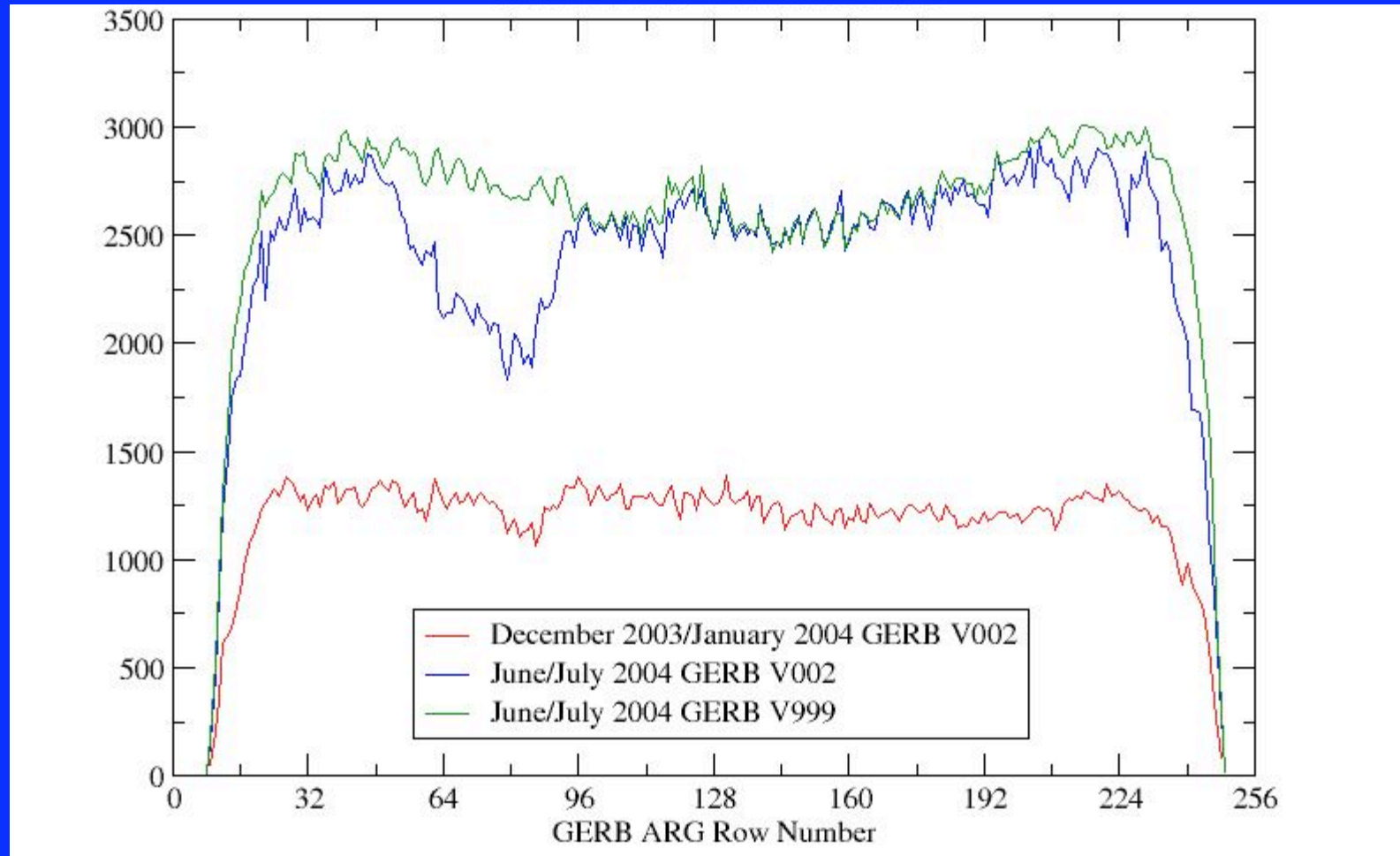
- Use GERB L2.0 ARGs for LW radiances & time
- Use RMIB's geolocations for GERB
- Use CERES Edition 2 ES8s
- View zenith angles within 5°
- Now comparison is based on the row in the ARG array, not GERB detector number



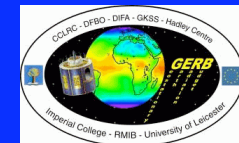
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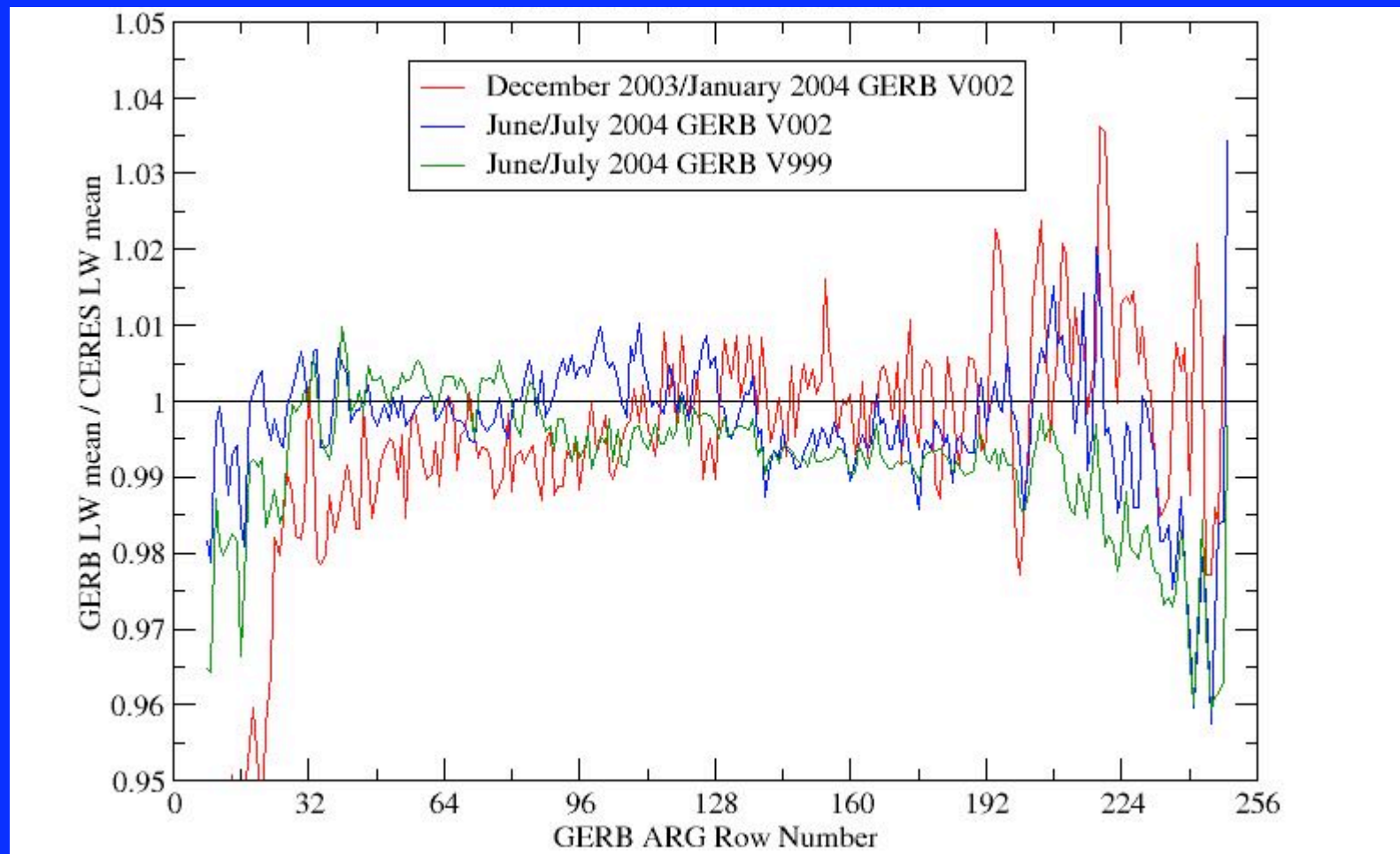
Number of Matches for Each ARG Row



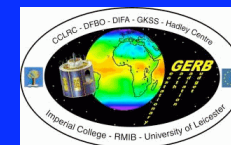
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GERB LW Mean/CERES LW Mean



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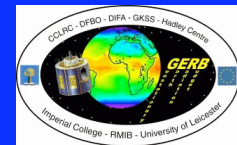


Conclusions

- CERES has been operated in 4 campaigns to measure radiances which are co-aligned with GERB during 2 NH winters & 2 NH summers.
- CERES serves as a transfer radiometer in comparing the 256 GERB detectors.
- These conclusions apply to detectors 49-174. For detectors 1-48 and 175-256, the sampling and results are not as good.
- GERB detectors vary by $\pm 2\%$ among themselves.



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Conclusions (cont.)

- Between adjacent detectors for SW, there is a random uncorrelated change of $\sim _ \%$ and a long range structure (over a score or more) of $\pm 2\%$ superimposed.
- For SW radiances, GERB/CERES is in range of 0.93 to 0.97.
- Comparisons are reproducible within $\pm 1\%$ among campaigns.
- For LW radiances, GERB/CERES is in range of 1.00 ± 0.01 .



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